

## HOW YOUR BRAIN UNDERSTANDS WHAT YOUR EAR HEARS

### West Virginia Science Content Standards and Objectives – Grades 6, 7, 8

Lesson	Standard	Objective
1, 2	SC.6.1.1 SC.7.1.1 SC.8.1.1	Explain that scientists formulate and test their explanations of nature using observation and experiments.
1, 5	SC.6.1.2 SC.7.1.2 SC.8.1.2	Recognize that scientific knowledge is subject to modification as new scientific information challenges current theories.
All lessons	SC.6.2.1 SC.7.2.1 SC.8.2.1	Cooperate and collaborate to ask questions, find answers, solve problems, and conduct investigations to further an appreciation of scientific discovery.
All lessons	SC.6.2.2 SC.7.2.2 SC.8.2.2	Formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
All lessons	SC.6.2.3 SC.7.2.3 SC.8.2.3	Apply skepticism, careful methods, logical reasoning and creativity in investigating the observable universe.
1, 2, 3, 4	SC.6.2.4 SC.7.2.4 SC.8.2.4	Use a variety of materials and scientific instruments to conduct explorations, investigations and experiments of the natural world (e.g., barometer, anemometer, microscope, computer).
3, 4	SC.6.2.5 SC.7.2.5 SC.8.2.5	Demonstrate safe techniques for handling, manipulating and caring for science materials, equipment, natural specimens and living organisms.
3, 4	SC.6.2.6 SC.7.2.6 SC.8.2.6	Utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, identifying dependent and independent variables).
All lessons	SC.6.2.7 SC.7.2.7 SC.8.2.7	Construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.

WEST VIRGINIA ALIGNMENT FOR NIH SUPPLEMENT HOW YOUR BRAIN UNDERSTANDS WHAT YOUR EAR HEARS

<b>All lessons</b>	<b>SC.6.2.8 SC.7.2.8 SC.8.2.8</b>	Use inferential reasoning to make logical conclusions from collected data.
<b>1, 2, 3, 4</b>	<b>SC.6.2.9 SC.7.2.9 SC.8.2.9</b>	Use appropriate technology solutions to gather data; graph data; interpret data; and analyze information.
<b>4</b>	<b>SC.6.3.2 SC.7.3.2 SC.8.3.2</b>	Construct a variety of useful models of an object, event, or process.
<b>3, 4, 5</b>	<b>SC.6.3.3 SC.7.3.3 SC.8.3.3</b>	Compare and contrast changes that occur in an object or a system to its original state.
<b>4, 5</b>	<b>SC.7.4.4</b>	Compare the level of organization of cells, tissues and organs in living things.
<b>1, 3, 5</b>	<b>SC.7.4.9</b>	Relate how an organism's behavior response is a combination of heredity and environment.
<b>4</b>	<b>SC.7.4.19</b>	Define characteristics of light and sound waves and describe how sound is perceived by the ear and light is perceived by the eye.
<b>4</b>	<b>SC.8.4.20</b>	Apply the conservation of energy theory to energy transformations (e.g., electrical/heat, heat/mechanical).
<b>4, 5</b>	<b>SC.7.5.1</b>	Make and compare different proposed solutions to an identified problem in light of specified criteria.
<b>5</b>	<b>SC.6.6.1 SC.7.6.1 SC.8.6.1</b>	Use scientific reasoning and the knowledge of science and technology to make informed personal decisions at the local and global levels.

**West Virginia Math Content Standards and Objectives – Grades 6, 7, 8**

<b>Lesson</b>	<b>Standard</b>	<b>Objective</b>
<b>3, 5</b>	<b>MA.6.1.5</b>	Use estimation to solve problems with whole numbers, fractions and decimals.
<b>3, 5</b>	<b>MA.6.1.6</b>	Solve problems in context involving addition, subtraction, multiplication, and division of whole numbers, fractions, mixed numbers and decimals.
<b>3, 5</b>	<b>MA.6.2.9</b>	Use variables to represent and solve real world problems appropriate for the 6 <sup>th</sup> grade using multiple strategies.

WEST VIRGINIA ALIGNMENT FOR NIH SUPPLEMENT HOW YOUR BRAIN UNDERSTANDS WHAT YOUR EAR HEARS

3, 5	MA.6.5.1	Collect, organize, display, and read data using appropriate graphs and tables.
3, 5	MA.7.1.5	Perform operations with integers (e.g., addition, subtraction, multiplication, division).
3, 5	MA.7.1.7	Solve application problems with whole numbers, decimals, fractions and percents.
3	MA.7.2.6	Use ratios and proportions to represent and solve application problems.
3, 5	MA.7.2.13	Represent and solve real world problems appropriate for 7 <sup>th</sup> grade using multiple strategies.
3, 5	MA.7.5.3	Collect, organize, graphically represent, and interpret data displays including: frequency distributions, line plots, scatter plots, box and whiskers, and multiple-line graphs.
3, 5	MA.8.1.5	Use estimation techniques with whole numbers, decimals, percent, fractions and mixed numbers to solve and verify solutions in application problems.
3, 5	MA.8.1.6	Solve application problems with whole numbers, decimals, fractions, percents and integers including, but not limited to, rates, tips, discounts, sales tax and interest.
3	MA.8.2.3	Use ratio and proportion to create and solve equations.
3, 5	MA.8.2.10	Represent and solve real world problems appropriate for 8 <sup>th</sup> grade using multiple strategies.
3, 5	MA.8.5.3	Create and extrapolate information from multiple-bar graphs, box and whisker plots, and other data displays using appropriate technology.
3	MA.8.5.5	Draw inferences and construct convincing arguments, including misuses of statistical or numeric information, based on data analysis.

**West Virginia Reading and Language Arts Content Standards and Objectives – Grades 6, 7, 8**

Lesson	Standard	Objective
All lessons	RLA.8.1.3	Use comprehension strategies (e.g., make judgments; hypothesize; critique; analyze).
1, 3, 4, 5	RLA.6.1.4	Analyze text to determine transitional words/language.
All lessons	RLA.6.1.5 RLA.7.1.4	Use comprehension strategies (e.g., generalize; evaluate; infer; paraphrase, draw conclusions, interpret meaning).
All lessons	RLA.6.1.10 RLA.8.1.10	Use resource materials (e.g., dictionary; glossary; thesaurus) to determine the meaning of unknown words or multiple meaning words.
All lessons	RLA.6.1.11	Use connotation and denotation to understand meaning.

WEST VIRGINIA ALIGNMENT FOR NIH SUPPLEMENT HOW YOUR BRAIN UNDERSTANDS WHAT YOUR EAR HEARS

All lessons	<b>RLA.6.1.12</b> <b>RLA.7.1.13</b> <b>RLA.8.1.11</b>	Use root words, prefixes and suffixes to spell words, change word meanings and generate new words appropriate to grade level.
3, 4, 5	<b>RLA.6.2.2</b> <b>RLA.7.2.1</b> <b>RLA.8.2.2</b>	From a prompt, use the writing process to develop a composition that contains specific, relevant details and transitions.
2, 3, 4, 5	<b>RLA.6.2.3</b>	Use writing strategies to address specific writing purposes (e.g., creative; journalistic; essay; narrative; informative; persuasive) and address various audiences (e.g., peers; teachers; employers).
2, 3, 4, 5	<b>RLA.7.2.3</b>	Use the writing process to compose various types of writing (e.g., creative; informative; expository; persuasive; articles; essays; journals; letters; poetry; research/reports).
All lessons	<b>RLA.6.2.19</b>	Use traditional organizers to create, read, interpret and organize information in the form of tables, graphs, diagrams and charts.
All lessons	<b>RLA.6.3.1</b> <b>RLA.7.3.1</b> <b>RLA.8.3.1</b>	Recognize and exhibit oral communication skills (e.g., volume; rate; audience etiquette).
All lessons	<b>RLA.8.3.3</b>	Think critically about oral/visual information presented; relate personal experiences and apply the information to global situations.
All lessons	<b>RLA.6.3.3</b> <b>RLA.7.3.4</b> <b>RLA.8.3.4</b>	Listen in order to comprehend topic and purpose (e.g., of a guest speaker; informational video; televised interview; radio news program).
All lessons	<b>RLA.6.3.4</b>	Reach consensus in group discussions or settings.
All lessons	<b>RLA.7.3.5</b> <b>RLA.8.3.5</b>	Play a variety of roles in group discussions, including active listener and discussion leader and/or facilitator.
<b>West Virginia Health Content Standards and Objectives – Grades 6, 7, 8</b>		
<b>Lesson</b>	<b>Standard</b>	<b>Objective</b>
4	<b>HE.6.1.4</b>	Describe the major parts and functions of the nervous system.
3, 4, 5	<b>HE.6.4.3</b>	Identify the importance of respecting people's differences.
5	<b>HE.6.6.2</b>	Explain how the goal setting and decision-making processes are important in designing strategies to quit using tobacco and other risking behaviors.

WEST VIRGINIA ALIGNMENT FOR NIH SUPPLEMENT HOW YOUR BRAIN UNDERSTANDS WHAT YOUR EAR HEARS

<b>4, 5</b>	<b>HE.7.2.2</b>	Identify situations that require professional health services and community resources that can provide those services.
<b>3, 4, 5</b>	<b>HE.7.4.3</b>	Recognize the importance of respecting individual differences.
<b>5</b>	<b>HE.8.6.1</b>	Identify personal health goals and choose strategies regarding nutrition and alcohol, tobacco, drug use and personal safety to achieve optimal personal health.
<b>5</b>	<b>HE.8.6.3</b>	Describe how personal health goals are influenced by changing information, abilities, priorities and responsibilities.
<b>5</b>	<b>HE.8.7.4</b>	Explain the need for legislation to protect and promote personal safety and health.